

Table 3: Comparative Analysis of Alternatives

| Alternative | Threshold Criteria | | Primary Balancing Criteria | | | | |
|--|--|--|---|---|---|---|--|
| | Overall Protection of Human Health and the Environment | Compliance with ARARs | Long-Term Effectiveness and Permanence | Reduction of Toxicity, Mobility, and Volume | Short-Term Effectiveness | Implementability | Estimated Costs |
| Alternative 1: No Action | <p>Potential risks from exposure to soil are greater than levels for current and reasonably anticipated land use.</p> <p>Not protective of human health and the environment under current conditions.</p> | <p>The CSEV for lead of 800 mg/Kg (worker scenario) potential chemical-specific TBC would not be met.</p> <p>Location- and action-specific ARARs do not apply to No Action.</p> | <p>Not effective in the long term because all current and potential future risks would remain.</p> | <p>Would be no reduction in toxicity, mobility, and volume through treatment.</p> <p>Would not address the statutory preference for treatment as a principal element.</p> <p>No treatment residuals would be generated.</p> | <p>Since no action would be taken, no short-term risks to the community and workers and no environmental impact from construction activities would occur.</p> <p>RAOs would not be met.</p> | <p>Since no technologies would be implemented, there are no technical or administrative implementability concerns.</p> | <p>No costs.</p> |
| Alternative 2: Institutional Controls | <p>Risks would be reduced and controlled through implementation, monitoring, and enforcement of ICs.</p> <p>Protective of human health.</p> <p>Relies on ICs to achieve protectiveness. Not considered to meet the NCP expectation of relying on engineered measures to reduce or eliminate potential risks.</p> | <p>The CSEV for lead of 800 mg/Kg (worker scenario) potential chemical-specific TBC would not be met.</p> <p>Since no active engineering measures would be implemented, location- and action-specific ARARs would not apply.</p> | <p>For long-term effectiveness, relies on implementation of ICs preventing residential land use and ICs requiring restrictions relative to soil excavation and management.</p> <p>USEPA does not consider ICs to be as effective or permanent as alternatives that employ engineered measures to insure protectiveness.</p> | <p>Would be no reduction in toxicity, mobility, and volume through treatment.</p> <p>Would not address the statutory preference for treatment as a principal element.</p> <p>No treatment residuals would be generated.</p> | <p>No short-term risks to the community and workers and no environmental impact from construction activities would occur.</p> <p>RAOs would be met upon implementation, monitoring, and enforcement of ICs.</p> | <p>No technical implementability concerns.</p> <p>Would require consent and long-term cooperation of owners of non-CCoD properties.</p> | <p>Capital: \$31,000</p> <p>Annual ICs monitoring costs: \$2,000/year</p> <p>Present Worth: \$70,000</p> |

Table 3: Comparative Analysis of Alternatives (continued)

| Alternative | Threshold Criteria | | Primary Balancing Criteria | | | | |
|--|--|--|--|---|--|---|--|
| | Overall Protection of Human Health and the Environment | Compliance with ARARs | Long-Term Effectiveness and Permanence | Reduction of Toxicity, Mobility, and Volume | Short-Term Effectiveness | Implementability | Estimated Costs |
| Alternative 3: Capping and Institutional Controls | <p>Would be protective of human health, as would eliminate the potential for direct contact with soil containing contaminants of concern above action levels.</p> <p>Maintenance of existing paved surfaces and installation and maintenance of a new cap would eliminate potential for windblown dust containing contaminants of concern.</p> <p>ICs preventing residential land use and requiring restrictions relative to soil excavation and management would provide additional protection.</p> | <p>Would comply with all chemical-specific ARARs and TBCs.</p> <p>No specific potential location-specific ARARs that would apply to this alternative were identified.</p> <p>It is expected that equipment and vehicles used during paving activities would comply with the action-specific ARARs of the Colorado Diesel-Powered Vehicle Emissions Standards for Visible Pollutants and the Colorado Noise Abatement Statute for allowable decibel levels.</p> | <p>Soil containing metals, and therefore residual risk, would remain; however, existing capped surfaces and new asphalt capping over those areas not currently covered would prevent exposures. While the concentrations of metals in soil would not be reduced, capped surfaces combined with ICs would provide an adequate and reliable means of preventing exposure and reducing risk.</p> <p>Alternative 3 is effective and permanent as it relies on both capping and ICs to insure that unacceptable risks do not occur.</p> <p>Permanence would be improved with regular cap inspection and maintenance as well as monitoring and enforcement of ICs.</p> | <p>There would be no reduction in the toxicity, mobility or volume through treatment under Alternative 3 as no treatment technologies would be employed.</p> <p>Therefore, no treatment residuals would be generated and the alternative would not address the statutory preference for treatment as a principal element.</p> | <p>Capping activities would not pose any unacceptable short-term risks or other adverse impacts. No short-term risks to the community, workers, or the environment from implementation of Alternative 3 are expected to occur. Workers would be protected by adhering to OSHA practices and proper health and safety measures.</p> <p>Capping of areas where metals in soil exceed action levels would insure that RAOs be met immediately after capping activities are completed and ICs implemented.</p> <p>Response objectives would be achieved in approximately one year.</p> | <p>Construction and maintenance of asphalt caps and development of ICs is technically feasible. Capping can easily be performed using standard construction equipment and labor. Necessary materials and personnel are easily attainable.</p> <p>There should be no administrative restrictions on implementation of Alternative 3, other than capping activities on property not owned by the CCoD.</p> <p>Implementation of ICs would require consent and long-term cooperation of owners of non-CCoD properties.</p> | <p>Capital: \$743,000</p> <p>Annual operations, maintenance and monitoring costs: \$2,000 - \$310,000/year</p> <p>Present Worth: \$1,590,000</p> |

Table 3: Comparative Analysis of Alternatives (continued)

| Alternative | Threshold Criteria | | Primary Balancing Criteria | | | | |
|---|--|---|--|--|--|---|--|
| | Overall Protection of Human Health and the Environment | Compliance with ARARs | Long-Term Effectiveness and Permanence | Reduction of Toxicity, Mobility, and Volume | Short-Term Effectiveness | Implementability | Estimated Costs |
| Alternative 4: Soil Excavation and Disposal and Institutional Controls | Removal of contaminated soil would allow for unrestricted use, eliminating exposure to human receptors. Metals would remain in soil under some buildings until those areas are redeveloped. Consequently, potential risks would not be entirely eliminated immediately but would be controlled through ICs that would only allow land uses that are consistent with the potential risks posed. Excavation/disposal of soil augmented with ICs would be protective of human health. Excavation of soils meets the NCP expectation of relying on engineered measures to eliminate potential risks. | <p>Would comply with NAAQS and CAPPAC for fugitive dust emissions chemical-specific ARARs by adhering to a Fugitive Emissions Dust Control Plan as well as CSEV for lead of 800 mg/Kg (worker scenario) potential TBC criterion.</p> <p>No potential location-specific ARARs were identified.</p> <p>Potential action-specific ARARs including Criteria for Classification of Solid and Hazardous Waste and Disposal Facilities and Practices, Colorado Hazardous and Solid Waste regulations, NAAQS and Colorado Air Emission Control regulations for emissions, and Colorado Noise Abatement Statute requirements would be complied with.</p> | <p>After excavation, risks would be eliminated and no site monitoring would be necessary to ensure effectiveness. Metals would remain in soil under some buildings until those areas are redeveloped. Consequently, potential risks would not be entirely eliminated immediately but would be controlled through ICs that would only allow land uses that are consistent with the potential risks posed.</p> <p>Excavation and off-site disposal provides a permanent means of eliminating risks such that long-term management and monitoring is not required. For areas where soil removal cannot be immediately conducted, long-term protection would be assured through the ICs component.</p> | <p>Excavation and disposal is USEPA Presumptive Remedy for soils containing metals. Technology would permanently remove the contaminants of concern, thereby reducing toxicity, mobility, and volume.</p> <p>As the excavated soil would be disposed in an off-site, permitted disposal facility, no treatment residuals would remain from excavation.</p> | <p>Soil excavation, transportation, and disposal; backfilling of excavations; and placing asphalt caps would pose minimal short-term risks to workers or the community. Workers would be protected by adhering to OSHA practices and proper health and safety measures. No environmental impact from construction is expected to occur. Excavation and offsite disposal of soil would insure that RAOs be met immediately after excavation activities are completed and ICs implemented.</p> <p>Response objectives would be achieved in 1 to 2 years.</p> | <p>Excavation and off-site disposal of soil and development of ICs is technically feasible. Excavation and disposal can easily be performed using standard construction equipment and labor. Necessary materials and personnel are easily attainable.</p> <p>There should be no administrative restrictions on implementation of Alt 4, other than activities on property not owned by CCoD.</p> <p>Implementation of ICs would require consent and long-term cooperation of owners of non-CCoD properties.</p> | <p>Capital: Initial \$21,633,000 Future (year 20) \$24,000,000</p> <p>Annual ICs monitoring costs: (through year 20) \$2,000/year</p> <p>Present Worth: \$35,750,000</p> |

Table 3: Comparative Analysis of Alternatives (continued)